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The anatomy of large valuation episodes

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Abstract We examine cases in which there is a large shift in a country's net foreign asset position due to the re-valuation of its foreign assets and/or foreign liabilities. We highlight the differences in large valuation shocks between countries characterized by large gross stocks of foreign assets and foreign liabilities and countries exhibiting large net external positions. Finally, we analyze macroeconomic dynamics in the neighborhood of large valuation episodes.

Keywords International financial integration · Valuation channel · Valuation episodes

JEL Classification F32 · F36

1 Introduction

The rapid increase in gross stocks of foreign assets and liabilities has revived interest in the dynamics of the external account. In particular, there is a growing concern for the impact of capital gains on the value of foreign asset and liability positions, which has been named the valuation channel of the external adjustment.

This growth in gross stocks, documented by Lane and Milesi-Ferretti (2001), together with the evidence on return differentials reported by Lane and Milesi-Ferretti (2001, 2007a), Tille (2008), Hung and Mascaro (2004) and Gourinchas and Rey (2007a), suggests that the valuation channel plays an important role in the external adjustment process. For instance, well-timed capital gains may make it

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unnecessary for a persistent debtor to run trade balance surpluses. Moreover, cross-border net capital gains can generate large wealth redistributions.

When the external adjustment is abrupt, the literature has focused on the study of current account reversals and sudden stops (Milesi-Ferretti and Razin 1998, 2000; Edwards 2004; Calvo et al. 2004). However, it is silent on the large movements in the external position that are driven by large valuation gains or losses, rather than by large swings in capital flows.

As a result of the breakthrough made by Lane and Milesi-Ferretti (2001, 2007a), it is possible to analyze sharp external adjustments from the valuation channel perspective. Since this database measures gross stocks of foreign assets and liabilities, the relative role of the rates of capital gain in both sides of the balance sheet as well as across different portfolio categories can be studied. Moreover, Lane and Milesi-Ferretti (2001, 2007a) provide enough information to evaluate how the increase in gross stocks of foreign assets and liabilities affects these adjustments.

This paper makes a step in this direction. In particular, we evaluate how the upsurge in gross international financial integration (IFI) has contributed to abrupt adjustments via the valuation channel. The methodology is analogous to the one used in the current account reversal literature. That is, we conduct an event study where a large valuation shock is defined as the year in which the valuation channel goes beyond a threshold.

Using a sample of 38 countries, we derive the valuation channel from the accounting framework used in Lane and Milesi-Ferretti (2007b) and identify 59 large valuation shocks between 1994 and 2004. This finding raises the following questions: Are large valuations the result of sizeable gross stocks? What is the relative role of the debt, direct investment or portfolio equity? Are large valuations persistent? Does a different pattern emerge for developing and advanced countries?

To answer these questions, we calculate the relative role of sizeable net external positions and gross stocks (gross IFI) in these large valuation shocks. We do this for the total international portfolio and for the debt, direct investment and portfolio equity subcomponents. Finally, we study the dynamics of the valuation channel and main related macroeconomic and asset price variables in the neighborhood of two types of large valuation episodes.

We find that the level of IFI matters for large valuation episodes in advanced economies, since large gross stocks magnify the impact of return differentials. These countries typically do not have large net positions. Rather, gross stocks of foreign assets and liabilities explain most of the episodes. The main contribution is attributable to the equity subcomponent.

For emerging markets and developing countries, valuation episodes are determined by sizeable net external positions and large rates of capital losses. In particular, the debt subcomponent played the main role. For most of these countries, the cumulated valuation shift was persistent, the real exchange rate largely depreciates and the trade balance improves.

In what remains, the paper is organized in four sections. In Sect. 2, we present the method to identify large valuation shocks. In Sect. 3, we evaluate the relative importance of gross stocks and net positions. In Sect. 4, we analyze the dynamics of

the valuation channel and a set of related macroeconomic and asset price variables, in the neighborhood of the valuation episodes. In Sect. 5, we conclude.

2 Method

This section constructs the measure of large valuation shocks. To this end, we define the valuation channel following Lane and Milesi-Ferretti (2007b) as

$$\mathrm{VAL}_t \equiv \mathrm{NFA}_t - \mathrm{NFA}_{t-1} - \mathrm{CA}_t. \tag{1}$$

Equation 1 shows that the valuation term is defined by the change in the net foreign asset position (NFA_t) minus the current account balance (CA_t).[1]

Alternatively, Eq. 1 can be written as

$$\mathrm{VAL}_t = \mathrm{kg}_t^A A_{t-1} - \mathrm{kg}_t^L L_{t-1}. \tag{2}$$

Equation 2 shows that the valuation channel is the net capital gain on the net foreign asset position, where kg_t^A and kg_t^L are the net rates of capital gain in foreign assets and liabilities respectively. These, are defined as

$$\mathrm{kg}_t \equiv \frac{\mathrm{Stock_t} - \mathrm{Stock_{t-1}} - \mathrm{Flow_t}}{\mathrm{Stock}_{t-1}}. \tag{3}$$

To ensure that our measure allows for cross-country comparisons, we scale variables as ratios to GDP. In the analysis, it is also helpful to define the measure of gross IFI following Lane and Milesi-Ferretti (2001, 2007a) as

$$\mathrm{IFI}_t \equiv \frac{A_t + L_t}{\mathrm{GDP}_t}. \tag{4}$$

Since we are concerned with large shifts in the net foreign asset positions, our study is closely related to the current account reversals and the sudden stops literature. Milesi-Ferretti and Razin (1998) define a current account reversal if the following two conditions are satisfied. First, an average reduction in the current account deficit of at least 3% points of GDP in a period of 3 years with respect to the 3 years before the event. Second, the maximum deficit after the reversal is no larger than the minimum deficit in the 3 years preceding the reversal. Milesi-Ferretti and Razin (2000) add a third condition to define a current account reversal: the average current account deficit must be reduced by at least one third.

Edwards (2004) follows a different strategy. He concentrates on the changes from one year to another. He defines a current account reversal as a reduction in the current account deficit of at least 4% in one year and a sudden stop by a capital inflows decline of at least 5% of GDP in one year. By contrast, Calvo et al. (2004) define a sudden stop as a phase that meets three conditions. First, it contains at least one observation in which the year-on-year fall in capital flows lies at least two

[1] Although we take Eq. 1 as the valuation channel, it is important to mention that part of the difference between the change in the net foreign asset position and the capital flows may be explained by data revisions (Lane and Milesi-Ferretti 2009). This decomposition of net foreign assets dynamics between the valuation term and current account is also analogous to Eq. 21 in Ghironi et al. (2007).

standard deviations below its sample mean. Second, it ends when the annual change in capital flows exceeds one standard deviation below its sample mean. Third, the start of a sudden stop phase is determined by the first time the annual change in capital flows falls one standard deviation below the mean.

Our study follows a strategy similar to Edwards (2004). Specifically, we analyze the changes from one year to another, setting the threshold equal to 10% of GDP. Therefore, a country has experienced a large valuation shock if the following condition is satisfied:

$$\mathrm{val}_t = \left| \frac{\mathrm{NFA_t} - \mathrm{NFA_{t-1}} - \mathrm{CA_t}}{\mathrm{GDP}_t} \right| > 0.1 \tag{5}$$

Since we are interested in the 'home country' perspective, we compute this ratio in local currency. In this way, we will also capture the effect of the exchange rate movements.

Figure 1 presents, on the vertical axis, the number of large valuation shocks for the period between 1971 and 2004 as defined by Eq. 5. Large valuation shocks together with their values and signs are reported in Table 1 for the period 1994–2004. Due to data quality issues and availability, the next sections will be based on this period only. We exclude countries where the average inflation rate, in this period, was greater than 40% and where the inflation rate the year of the large valuation shock was also greater than 40%.

Table 1 shows that 21 out of the 22 large valuation shocks were negative in the group of emerging markets and developing countries. The only positive large valuation shock in this group took place in Israel in 2001. Here, the cross-country average number of large valuation shocks is 1.3.

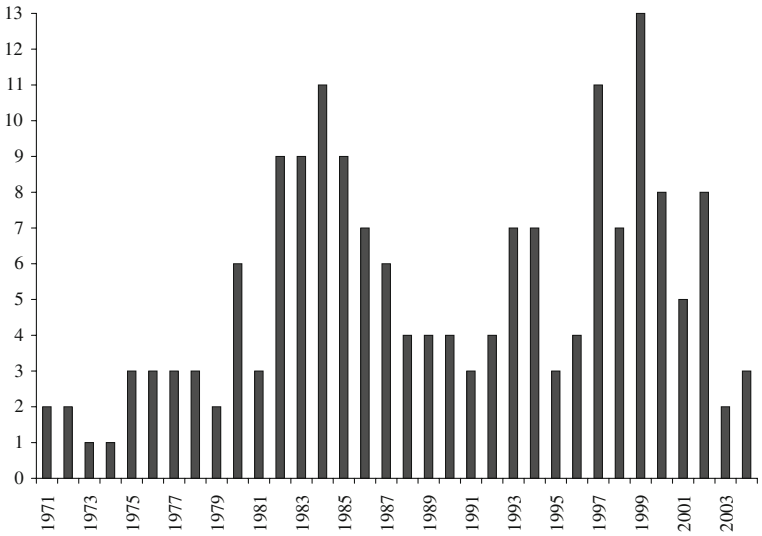

Fig. 1 Large valuation shocks in time. *Note*: Vertical axis shows the number of large valuation shocks

Table 1 Large valuation shocks

Country	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	Episode Type
Emerging markets and developing countries												
Argentina									−44.8			A
Brazil						−11.4			−13.7			A
Colombia				−11.7								A
Indonesia	−13.3			−45.2	−53.7		−11.5				−11.9	A
Israel						−23.3		12.2				B
Malaysia	−15.1			−12.9		−22.2						A
Mexico	−16.7	−22.6										A
Philippines				−20.5		−13.0	−22.9		−10.2			A
South Africa						−18.5						A
Thailand				−38.4								A
Advanced countries												
Finland					−40.3	−88.1		46.5	32.7			B
France						−11.5						A
Greece											−12.6	A
Iceland							−11.5	−13.9				A
Ireland	12.1			34.2	11.3	20.7	−46.4					B
Japan						−12.1						A
Netherlands	−31.0		−12.2	−14.1	−18.8	27.2			−12.8			B
New Zealand		−12.3			18.3		19.2					B
Norway							−14.2					A
Sweden				11.0	15.3	12.4	−12.1	21.0	−30.1	−14.2		B
Switzerland			21.7	−10.8			−30.7			−13.6	−14.3	B
United Kingdom						10.3						A

Note: Large valuation shocks in domestic currency

For the group formed by advanced countries, the valuation channel hits the 10% of GDP threshold 37 times, giving an average of 1.8 large valuation shocks by country. Here, the signs of the large valuation shocks are mixed: 15 positive and 22 negative.

3 International financial integration and the net external position

3.1 Accounting

Taking into account that countries have experienced an increase in gross IFI, this section decomposes the valuation channel to show the relative role played by sizable gross stocks and large net positions in large valuation shocks.[2] To this end, we add and subtract $\mathrm{kg}_t^L A_{t\text{-}1}$ from Eq. 2 and divide by GDP_t to obtain

$$\mathrm{val}_t = \left(\mathrm{kg}_t^A - \mathrm{kg}_t^L\right) a_{t-1} + \mathrm{kg}_t^L nfa_{t-1}. \tag{6}$$

Variables $a_{t\text{-}1}$, $l_{t\text{-}1}$ and $nfa_{t\text{-}1}$ are the outstanding levels of foreign assets and liabilities and the net foreign asset position, scaled by GDP_t. The first term on the right side of Eq. 6 shows the role of gross stocks. The larger the outstanding gross stock of foreign assets, the greater will be the valuation generated by a given difference in the rates of capital gain between assets and liabilities. The second term shows the role of the outstanding net foreign asset position for a given rate of capital gain in foreign liabilities.

Although this expression is informative, it is not possible to separate the effect of outstanding gross stocks of foreign assets plus liabilities and the net foreign asset position directly. Adding and subtracting $\mathrm{kg}_t^A L_{t\text{-}1}$ from Eq. 2, adding this expression to Eq. 6 and rearranging, yields

$$\mathrm{val}_t = \overline{\mathrm{kg}_t} nfa_{t-1} + \mathrm{kgdev}_t (a_{t-1} + l_{t-1}) \tag{7}$$

$$\mathrm{val}_t = \mathrm{valnet}_t + \mathrm{valgross}_t \tag{8}$$

where $\overline{\mathrm{kg}_t} = \frac{\mathrm{kg}_t^{\mathrm{A}} + \mathrm{kg}_t^{\mathrm{L}}}{2}$ and $\mathrm{kgdev}_t = \frac{\mathrm{kg}_t^{\mathrm{A}} - \mathrm{kg}_t^{\mathrm{L}}}{2}$. In contrast to Eq. 6, Eq. 7 breaks down the roles of net positions and gross stocks in the $\overline{\mathrm{kg}_t} nfa_{t-1}$ and kgdev_t $(a_{t\text{-}1} + l_{t\text{-}1})$ terms. We call these terms valnet_t and $\mathrm{valgross}_t$, respectively.

Levels of the rates of capital gain matter for the $valnet_t$ term. The valuation attributable to it depends on the size of the net foreign asset position as well as the mean rate of capital gain or loss, given by $\overline{\mathrm{kg}_t}$. Therefore, even if the size of gross stocks may be small, a large net position combined with high rates of capital gain or loss will give a predominant role to the term valnet_t, in Eq. 8.

Conversely, if rates of capital gain are low and the difference between these rates in assets and liabilities is high, the term $\mathrm{valgross}_t$ will play the predominant role in propagating a shock to the economy. This means that, when gross stocks of foreign assets and liabilities are large and the net foreign asset position is small, what

[2] We compare diversification finance versus development finance international investments. See Obstfeld and Taylor (2003).

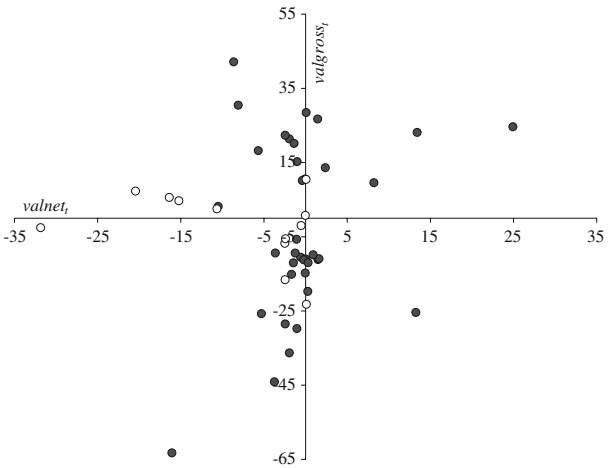

Fig. 2 Decomposition of large valuations shocks. *Note*: This figure presents the first and the second term of Eq. 7. *Filled circles* are advanced countries. The following large valuation shocks are not reported because the data on equity flows and debt flows are not available: Indonesia 1994, 1997, 1998, 2000; Malaysia 1994, 1997, 1999 and Mexico 1994, 1995. As an outlier, the shock of Argentina in 2002 is also excluded (its values of valnet$_t$ and valgross$_t$ are −77.1 and 42.9, respectively)

matters is the spread between the rates of capital gain in assets and liabilities, rather than the level of these rates. This spread is captured by kgdev$_t$ in Eq. 7.

Figure 2 shows these two roles by plotting valnet$_t$ and valgross$_t$ for each large valuation shock, with valnet$_t$ along the horizontal axis and valgross$_t$ along the vertical axis. An inspection of this figure shows that valgross$_t$ played an important role. For instance, in most of the advanced countries, the valuation generated by the valgross$_t$ term was larger than the valuation generated by the valnet$_t$ term. By contrast, the role of the valgross$_t$ term in emerging markets and developing countries was not predominant. The contribution of net foreign asset positions, measured by the valnet$_t$ term was also important in these countries.

Taking this evidence into account, we propose a taxonomy of large valuation shocks based on the relative roles of valnet$_t$ and valgross$_t$. To this end, we define:

Definition 1 A large valuation shock is Type-N if $|\text{valnet}_t| > |\text{valgross}_t|$.

Definition 2 A large valuation shock is Type-G if $|\text{valnet}_t| < |\text{valgross}_t|$.

Table 2 presents the decomposition of the large valuation shocks into all the components of Eq. 7 as well as the type of the shock according to Definitions 1 and 2. From the 50 cases were this decomposition is performed, 16% were Type-N and 84% were Type-G. In the advanced countries group, 5.4% of the shocks were Type-N while 94.6% were Type-G. In contrast, the group formed by developing markets and emerging countries presents 53.8 and 46.2% of Type-N and Type-G large valuation shocks, respectively. In terms of the shares of these groups in the shocks types, advanced countries represent 83.3% of all the Type-G shocks and 25% of all the Type-N shocks.

Table 2 Valuation decomposition: total

Year	Country	$\overline{\text{kg}}_t$	$nfa_{t\text{-}1}$	kgdev_t	$(a_{t\text{-}1} + l_{t\text{-}1})$	Type
1994	Ireland	0.9	−39.7	3.2	292.4	G
1994	Netherlands	−15.2	15.2	−9.6	281.6	G
1996	Netherlands	8.9	−11.5	−2.1	259.2	G
1996	Switzerland	9.1	89.6	2.2	431.6	G
1997	Colombia	10.3	−20.0	−10.5	53.2	G
1997	Ireland	34.7	−21.5	9.2	396.4	G
1997	Netherlands	6.7	−17.5	−3.0	294.5	G
1997	Sweden	14.5	−37.7	7.3	240.6	G
1997	Switzerland	11.2	115.9	−4.7	531.5	G
1998	Finland	4.7	−38.5	−22.7	147.2	G
1998	Ireland	15.9	13.0	2.1	562.6	G
1998	Netherlands	−1.1	−23.5	−5.3	348.7	G
1998	New Zealand	2.1	−118.3	11.7	188.9	G
1998	Sweden	8.2	−22.8	7.2	283.2	G
1999	Finland	21.9	−79.0	−31.9	213.9	G
1999	France	−8.6	7.4	−4.1	275.0	G
1999	Ireland	−5.4	24.8	2.3	869.9	G
1999	Israel	4.7	1.9	−13.7	156.3	G
1999	Japan	1.2	26.1	−11.1	109.3	G
1999	Netherlands	−3.7	−41.0	6.2	453.4	G
1999	Philippines	0.0	−61.4	0.5	127.0	G
1999	South Africa	33.0	−6.9	−16.3	93.8	G
1999	Sweden	17.7	−5.4	4.4	327.1	G
1999	United Kingdom	0.4	−14.7	2.1	485.6	G
2000	Iceland	−1.8	−46.1	−7.7	117.6	G
2000	Ireland	−8.2	39.6	−4.0	948.8	G
2000	New Zealand	8.3	−91.6	14.7	193.4	G
2000	Norway	0.0	15.3	−5.5	166.9	G
2000	Sweden	−2.3	8.8	−2.6	413.9	G
2000	Switzerland	−0.8	120.0	−3.5	825.9	G
2001	Iceland	5.4	−59.6	−5.9	141.6	G
2001	Israel	−0.2	−24.1	5.7	179.4	G
2001	Sweden	−12.1	−0.6	6.1	449.8	G
2002	Finland	−17.6	−73.7	7.3	307.3	G
2002	Netherlands	−10.7	−13.4	−1.9	554.6	G
2002	Philippines	0.8	−61.3	−1.3	135.7	G
2002	Sweden	−22.6	22.6	−5.9	419.3	G
2003	Sweden	1.8	−2.1	−4.3	329.1	G
2003	Switzerland	1.4	114.2	−1.3	832.6	G
2004	Greece	2.4	−56.8	−6.8	162.2	G
2004	Indonesia	4.9	−43.8	−5.5	90.4	G

Table 2 continued

Year	Country	$\overline{\text{kg}}_t$	$nfa_{t\text{-}1}$	kgdev_t	$(a_{t\text{-}1} + l_{t\text{-}1})$	Type
2004	Switzerland	−1.5	111.5	−1.7	851.6	G
1995	New Zealand	11.4	−86.4	2.1	142.5	N
1997	Philippines	41.4	−44.3	7.0	94.2	N
1997	Thailand	61.7	−50.3	−2.4	103.0	N
1999	Brazil	49.5	−29.5	7.0	64.6	N
2000	Philippines	16.4	−58.5	1.7	135.0	N
2001	Finland	−18.4	−129.9	7.0	340.3	N
2002	Argentina	169.6	−42.9	34.0	118.9	N
2002	Brazil	32.7	−45.6	5.6	91.3	N

Note: Decomposition from Eq. 7. 'Type' stands for the kind of large valuation shock according to definitions 1 and 2. Variables $nfa_{t\text{-}1}$, $a_{t\text{-}1}$ and $l_{t\text{-}1}$ are the previous year net position, gross stocks of assets and gross stock of liabilities respectively scaled by GDP_t. The decomposition for the following countries is not reported because the data on equity flows and debt flows are not available: Indonesia 1994, 1997, 1998, 2000; Malaysia 1994, 1997, 1999 and Mexico 1994, 1995

3.2 Subcomponents

Since Lane and Milesi-Ferretti (2001, 2007a) break the international portfolio into debt, portfolio equity and direct investment, it is possible to apply our taxonomy of large valuation shocks to these subcomponents. Next, we make use of this classification and present the type of each shock at this level of disaggregation, as well as in the aggregate portfolio.

Tables 3, 4, and 5 present the decomposition of the valuation channel in Eq. 7, as well as the type of shock in the aggregate portfolio and in each subcomponent, according to definitions 1 and 2. From here onwards, we refer to the type of shock in each subcomponent using the DEBT-, PEQ- and FDI-mnemonics for debt, portfolio equity and foreign direct investment, respectively.

When we study the shock type in the debt subcomponent conditional on the aggregate large valuation shock being Type-G, we find that 52.4% of these shocks were DEBT-G and that most of them took place in advanced countries. By contrast, when we condition the analysis on the aggregate shock being Type-N, we find that 75% were DEBT-N and occurred in emerging markets and developing countries only.

The assessment of the equity subcomponents shows that the proportion of type G shocks conditional on the aggregate large valuation shock being Type-G is higher than in the debt case. In portfolio equity, 69% of these shocks were also PEQ-G while in foreign direct investment, 71.4% were FDI-G. As in the debt case, most of these occurred in advanced countries. By contrast, when we condition on the aggregate shock being Type-N, we find that 37.5% of the shocks were PEQ-N and 62.5% were FDI-N.

Table 3 Valuation decomposition: debt

Year	Country	$\overline{\text{kg}}_t$	$nfa_{t\text{-}1}$	kgdev_t	$(a_{t\text{-}1} + l_{t\text{-}1})$	DEBT	Type
1994	Ireland	1.0	−5.2	5.8	185.7	G	G
1994	Netherlands	−21.2	11.3	−11.8	175.6	G	G
1996	Netherlands	3.3	−15.8	2.2	141.3	G	G
1997	Colombia	3.4	−10.7	−6.9	41.2	G	G
1997	Ireland	23.0	24.3	15.8	269.7	G	G
1997	Netherlands	−2.0	−16.4	1.2	150.6	G	G
1997	Sweden	−12.5	−37.6	−6.4	126.4	G	G
1998	Finland	0.4	−26.3	−1.9	98.0	G	G
1998	Netherlands	−7.6	−17.2	−2.8	176.0	G	G
1998	Sweden	−1.0	−42.8	1.4	117.5	G	G
1999	Ireland	−5.5	120.6	−2.0	603.2	G	G
1999	Israel	−8.4	10.8	−2.4	123.0	G	G
1999	Netherlands	−7.4	−22.9	12.1	231.0	G	G
1999	Philippines	−0.8	−41.1	1.4	99.5	G	G
2000	Iceland	−2.8	−62.0	−11.5	86.9	G	G
2000	Norway	3.3	−0.3	−5.1	103.9	G	G
2000	Sweden	4.0	−37.0	−2.4	131.1	G	G
2001	Sweden	−1.3	−39.1	−1.2	156.5	G	G
2002	Netherlands	−7.6	−12.4	−2.0	284.6	G	G
2002	Philippines	2.3	−41.5	−2.2	110.3	G	G
2002	Sweden	−4.7	−51.6	−2.3	163.2	G	G
2004	Greece	0.6	−46.4	−6.4	136.8	G	G
1996	Switzerland	9.5	86.4	1.9	273.2	N	G
1997	Switzerland	2.4	103.6	−0.3	345.4	N	G
1998	Ireland	25.3	71.7	1.1	387.0	N	G
1998	New Zealand	4.3	−54.3	2.3	85.0	N	G
1999	Finland	−17.9	−30.5	−0.7	110.7	N	G
1999	France	−17.1	4.9	0.4	142.8	N	G
1999	Japan	−8.1	22.7	−1.2	90.6	N	G
1999	South Africa	−6.2	−17.6	0.6	34.5	N	G
1999	Sweden	−1.9	−44.2	0.5	129.7	N	G
1999	United Kingdom	−2.8	−13.3	0.04	350.7	N	G
2000	Ireland	−11.5	117.0	0.0	622.4	N	G
2000	New Zealand	14.7	−47.7	3.4	89.6	N	G
2000	Switzerland	−4.9	100.9	0.9	495.4	N	G
2001	Iceland	16.5	−83.8	5.7	104.3	N	G
2001	Israel	7.5	8.0	0.1	118.4	N	G
2002	Finland	−4.0	−16.0	−0.3	141.3	N	G
2003	Sweden	−3.4	−46.3	−1.0	153.3	N	G
2003	Switzerland	−3.2	98.8	−0.4	524.6	N	G
2004	Indonesia	5.8	−34.5	−0.2	78.8	N	G

Table 3 continued

Year	Country	$\overline{\text{kg}}_t$	nfa_{t-1}	kgdev_t	$(a_{t-1} + l_{t-1})$	DEBT	Type
2004	Switzerland	−4.2	99.0	−0.7	513.9	N	G
1995	New Zealand	−1.3	−43.9	−3.1	66.2	G	N
2001	Finland	−2.4	−19.1	−1.5	122.4	G	N
1997	Philippines	51.6	−24.1	−3.0	69.7	N	N
1997	Thailand	74.3	−31.7	−15.3	80.9	N	N
1999	Brazil	45.2	−20.2	−4.9	41.1	N	N
2000	Philippines	23.1	−36.3	−2.8	105.4	N	N
2002	Argentina	207.7	−21.8	1.6	81.0	N	N
2002	Brazil	39.3	−26.9	−8.2	52.8	N	N

Note: Decomposition from Eq. 7. 'Type' stands for the kind of large valuation shock according to definitions 1 and 2. 'DEBT' stands for the type of shock in the debt subcomponent. Variables nfa_{t-1}, a_{t-1} and l_{t-1} are the previous year net position, gross stocks of assets and gross stock of liabilities respectively scaled by GDP_t. The decomposition for the following countries is not reported because the data on equity flows and debt flows are not available: Indonesia 1994, 1997, 1998, 2000; Malaysia 1994, 1997, 1999 and Mexico 1994, 1995

3.3 Summary

The study of the aggregate international investment portfolio shows that Type-N large valuation shocks are mainly present in emerging markets and developing countries, while Type-G dominates in advanced countries. The reason lies in the high mean rates of capital loss combined with large net foreign asset positions in the former group, and high spreads between the rates of capital gains combined with large gross stocks in the latter group. In terms of the subcomponents, Type-N shocks were typically driven by net valuation movements in the debt categories. For the Type-G large valuation shocks, gross stocks in the equity subcomponent combined with high spreads played the predominant role in most advanced countries.

4 Large valuation episodes and macroeconomic dynamics

4.1 Method

As mentioned, this paper is closely related to the current account reversal and sudden stop literature. In this field, Milesi-Ferretti and Razin (1998, 2000) show what triggers current account reversals and which factors determine how costly these reversals are. To this end, they examine low- and middle-income countries and find that domestic variables such as current account balances, the degree of trade openness and levels of reserves contribute to the likelihood of current account reversals. External variables, such as unfavorable terms of trade and high interest rates in advanced economies, also contribute to the probability of these reversals.

Using a panel of 157 countries, Edwards (2004) shows that current account reversals and sudden stops are associated: 46.1% of the countries subject to sudden

Table 4 Valuation decomposition: portfolio equity

Year	Country	$\overline{\text{kg}}_t$	nfa_{t-1}	kgdev_t	$(a_{t-1} + l_{t-1})$	PEQ	Type
1994	Netherlands	−6.0	−10.0	−6.4	46.5	G	G
1996	Netherlands	33.9	−8.8	−11.6	51.2	G	G
1996	Switzerland	14.2	−18.1	6.8	92.1	G	G
1997	Netherlands	30.3	−17.0	−11.8	68.0	G	G
1997	Switzerland	33.6	−13.3	−12.5	111.6	G	G
1998	Finland	59.3	−19.9	−71.8	24.9	G	G
1998	Ireland	−18.5	−26.4	−6.8	116.1	G	G
1998	Netherlands	19.0	−26.0	−6.0	90.0	G	G
1998	New Zealand	7.7	−7.1	26.2	24.0	G	G
1999	France	23.2	−11.0	−11.9	30.9	G	G
1999	Ireland	7.5	−51.6	17.1	179.8	G	G
1999	Israel	85.1	−4.3	−68.0	14.8	G	G
1999	Japan	57.3	−2.2	−51.6	11.7	G	G
1999	Netherlands	1.8	−34.4	2.3	122.4	G	G
1999	South Africa	13.8	2.5	13.9	28.1	G	G
1999	Sweden	38.2	−8.8	−18.6	63.5	G	G
1999	United Kingdom	19.6	−10.9	12.2	78.1	G	G
2000	Iceland	−11.1	16.2	9.4	20.4	G	G
2000	Ireland	−13.5	−36.2	−2.2	241.6	G	G
2000	New Zealand	−14.2	0.9	12.0	27.8	G	G
2000	Norway	−3.3	8.8	−8.1	24.4	G	G
2000	Sweden	−6.3	−10.1	6.5	94.2	G	G
2000	Switzerland	7.6	−20.9	−12.3	220.8	G	G
2001	Sweden	−19.6	−10.8	11.9	92.7	G	G
2002	Sweden	−37.2	12.9	9.5	81.5	G	G
2003	Sweden	24.3	14.6	−8.3	53.3	G	G
2004	Greece	17.7	−5.8	−15.7	9.7	G	G
2004	Indonesia	−114.8	−6.8	−170.6	6.9	G	G
2004	Switzerland	2.4	−30.2	−1.3	192.9	G	G
1997	Sweden	25.2	−11.9	−3.5	39.9	N	G
1998	Sweden	24.8	−11.2	3.0	51.8	N	G
1999	Finland	93.8	−58.6	−52.9	66.9	N	G
1999	Philippines	19.2	−5.7	3.2	8.7	N	G
2001	Iceland	−11.5	22.3	4.0	24.6	N	G
2001	Israel	−21.9	−21.8	10.5	33.3	N	G
2002	Finland	−39.3	−78.4	5.8	107.8	N	G
2002	Netherlands	−27.3	−10.8	−1.7	114.1	N	G
2002	Philippines	−24.4	−2.8	4.4	5.6	N	G
2003	Switzerland	16.6	−30.8	1.8	170.0	N	G
1997	Philippines	33.4	−9.1	57.1	10.4	G	N
2000	Philippines	−16.5	−6.7	19.3	10.3	G	N

Table 4 continued

Year	Country	$\overline{\text{kg}}_t$	nfa_{t-1}	kgdev_t	$(a_{t-1} + l_{t-1})$	PEQ	Type
2002	Argentina	78.2	3.3	58.2	4.8	G	N
2002	Brazil	2.4	−6.0	9.9	8.3	G	N
1995	New Zealand	32.4	−6.7	3.7	13.7	N	N
1999	Brazil	111.3	−3.5	−28.7	4.4	N	N
2001	Finland	−32.7	−131.2	6.0	160.1	N	N

Note: Decomposition from Eq. 7. 'Type' stands for the kind of large valuation shock according to definitions 1 and 2. 'PEQ' stands for the type of shock in the portfolio equity subcomponent. Variables nfa_{t-1}, a_{t-1} and l_{t-1} are the previous year net position, gross stocks of assets and gross stock of liabilities respectively scaled by GDP_t. The decomposition for the following countries is not reported because the data on equity flows and/or debt flows are not available: Colombia 1997; Indonesia 1994, 1997, 1998, 2000; Ireland 1994, 1997; Malaysia 1994, 1997, 1999; Mexico 1994, 1995 and Thailand 1997

stops faced a current account reversal and 22.9% of those subject to current account reversals faced a sudden stop in the same year.

Following the event study methodology of Eichengreen et al. (1995) that distinguishes between periods of 'turbulence' from periods of 'tranquility', Milesi-Ferretti and Razin (2000) show that the current account reversals are highly associated with major changes in external positions.

The literature has also studied the role of the valuation channel in the context of gradual external adjustments. For instance, Lane and Milesi-Ferretti (2006) show that the valuation channel tends to stabilize the external position in advanced countries. This is due to assets and liabilities being mostly denominated in foreign and domestic currency respectively. With this balance sheet structure, a currency depreciation improves the net foreign asset position.

Evidence on the valuation channel stabilizing the external position of the United States, can be found in the International Monetary Fund's World Economic Outlook (2005), Lane and Milesi-Ferretti (2006) and Gourinchas and Rey (2007b). Studies assessing empirically the contribution of the valuation channel to the external adjustment process (De Gregorio 2005; Obstfeld and Rogoff 2007; Lane and Milesi-Ferretti 2007b), conclude that the valuation channel accounts for 14–30% of the total adjustment. In addition, Gourinchas and Rey (2007b) investigate the relative importance of exchange rate movements to adjustment of external imbalances via the valuation or trade channel, finding that stabilizing valuation effects contribute as much as 27% to the external adjustment for the United States.

In what follows, we assess the dynamics of the valuation and trade channel together with other related macroeconomic and asset price variables, following the strategy of Milesi-Ferretti and Razin (1998, 2000). We analyze their behavior in the 3-year neighborhood of a valuation episode and evaluate: whether large valuation shocks were counterbalanced in the following years; whether the valuation channel and trade channel moved in the same direction and how real exchange rate, rate of return differentials, equity prices and bond returns behaved in the neighborhood of these episodes. Furthermore, we report the evolution of the inflation rate and the rate of growth of the real GDP.

Table 5 Valuation decomposition: foreign direct investment

Year	Country	$\overline{\text{kg}}_t$	nfa_{t-1}	kgdev_t	$(a_{t-1} + l_{t-1})$	FDI	Type
1994	Netherlands	−4.9	14.0	−5.2	59.5	G	G
1996	Netherlands	1.1	13.1	−0.4	66.7	G	G
1997	Netherlands	1.0	16.0	1.2	75.9	G	G
1997	Sweden	50.3	12.3	21.3	62.0	G	G
1997	Switzerland	8.2	25.7	4.0	74.5	G	G
1998	Netherlands	−9.3	19.7	−3.0	82.8	G	G
1998	New Zealand	−5.5	−56.9	14.0	79.9	G	G
1998	Sweden	6.0	31.1	16.0	100.9	G	G
1999	France	−10.9	13.8	−5.1	90.3	G	G
1999	Israel	6.5	−4.5	−18.5	18.5	G	G
1999	Japan	−8.1	5.5	−18.3	6.7	G	G
1999	Philippines	−7.7	−14.7	−7.5	18.9	G	G
1999	South Africa	124.7	8.2	−107.0	31.1	G	G
1999	Sweden	23.7	47.7	12.6	121.7	G	G
1999	United Kingdom	−5.3	9.5	5.0	56.8	G	G
2000	Iceland	−22.4	−0.3	−1.5	10.0	G	G
2000	Ireland	16.4	−41.1	−24.5	84.8	G	G
2000	New Zealand	−17.8	−44.8	15.2	76.0	G	G
2000	Norway	−6.5	6.7	−3.1	38.7	G	G
2000	Sweden	−6.2	55.5	−6.0	177.5	G	G
2001	Iceland	7.5	1.9	−17.3	12.7	G	G
2001	Israel	−2.5	−10.4	3.9	27.7	G	G
2001	Sweden	−20.5	47.9	14.3	184.8	G	G
2002	Netherlands	−10.7	10.8	−2.1	135.2	G	G
2002	Philippines	1.5	−16.9	2.1	19.8	G	G
2003	Sweden	3.6	29.9	−14.1	104.6	G	G
2003	Switzerland	0.2	46.3	−1.6	138.0	G	G
2004	Greece	5.5	−4.9	−4.2	15.7	G	G
2004	Indonesia	−68.3	−2.5	−53.3	4.8	G	G
2004	Switzerland	3.3	42.7	−4.6	144.8	G	G
1994	Ireland	−8.4	−28.7	−0.1	49.3	N	G
1996	Switzerland	3.1	21.3	0.2	66.3	N	G
1997	Colombia	31.9	−8.8	−11.9	10.6	N	G
1997	Ireland	33.8	−26.1	0.1	47.5	N	G
1998	Finland	−59.8	8.4	3.7	23.1	N	G
1998	Ireland	17.5	−32.4	0.4	59.5	N	G
1999	Finland	−19.2	10.2	4.4	36.1	N	G
1999	Ireland	−16.5	−44.3	3.3	86.9	N	G
1999	Netherlands	−17.7	16.4	−1.4	100.0	N	G
2000	Switzerland	−7.1	40.0	2.5	109.6	N	G
2002	Finland	−16.0	20.5	1.9	55.5	N	G

Table 5 continued

Year	Country	$\overline{\text{kg}}_t$	nfa_{t-1}	kgdev_t	$(a_{t-1} + l_{t-1})$	FDI	Type
2002	Sweden	−39.0	60.7	−4.3	161.2	N	G
1999	Brazil	36.8	−5.8	43.3	19.1	G	N
2002	Argentina	120.0	−24.4	107.6	33.1	G	N
2002	Brazil	26.2	−12.7	25.8	30.2	G	N
1995	New Zealand	18.2	−35.9	4.3	62.5	N	N
1997	Philippines	14.8	−11.1	10.9	14.1	N	N
1997	Thailand	37.5	−10.0	26.1	13.4	N	N
2000	Philippines	−7.1	−15.6	−0.7	19.3	N	N
2001	Finland	−15.5	19.8	0.1	54.4	N	N

Note: Decomposition from Eq. 7. 'Type' stands for the kind of large valuation shock according to definitions 1 and 2. 'FDI' stands for the type of shock in the foreign direct investment subcomponent. Variables nfa_{t-1}, a_{t-1} and l_{t-1} are the previous year net position, gross stocks of assets and gross stock of liabilities respectively scaled by GDP_t. The decomposition for the following countries is not reported because the data on equity flows and debt flows are not available: Indonesia 1994, 1997, 1998, 2000; Malaysia 1994, 1997, 1999 and Mexico 1994, 1995

Equation 5 defined a large valuation shock by the absolute value for the ratio $\text{VAL}_t/\text{GDP}_t$ being greater than 0.1. Next, we define a large valuation episode as an interval $(t, t + N)$ during which at least one large valuation shock occurs and $N \geq 0$. Moreover, it is surrounded by periods of tranquility, with no large valuation shocks taking place during the intervals $(t-3,\ t-1)$ and $(t + N + 1,\ t + N + 3)$. We further distinguish between two types of large valuation episodes. A large valuation episode is Type-A if all the large valuation shocks during the episode have the same sign. It is Type-B if the episode includes large valuation shocks with opposing signs. Table 1 reports these episodes by country.

Next, we assign countries to three groups. The first group contains developing countries and emerging markets with negative Type-A episodes. The second group contains advanced countries with negative Type-A episodes.[3] In the last group, we place advanced countries with Type-B episodes.

Figure 3 presents cross-country means of the valuation channel, real rate of return in debt, real rate of return in equity, real exchange rate, domestic bond return index, domestic equity price index, trade balance, rate of growth of real GDP and inflation for the first group of countries. The valuation channel and trade balance are scaled by the year-of-episode GDP. When the episode lasts more than one year, the scaling factor is the mean GDP of that period. The countries in this group are: Argentina 2002, Brazil 1999–2002, Colombia 1997, Malaysia 1994–1999, Mexico 1994–1995, the Philippines 1997–2002, South Africa 1999 and Thailand 1997. The valuation channel, real exchange rate and trade balance are

[3] We analyze only advanced countries with negative Type-A large valuation episodes because we are interested in drawing general cross-country regularities and the only advanced country with a positive Type-A episode is the United Kingdom in 1999.

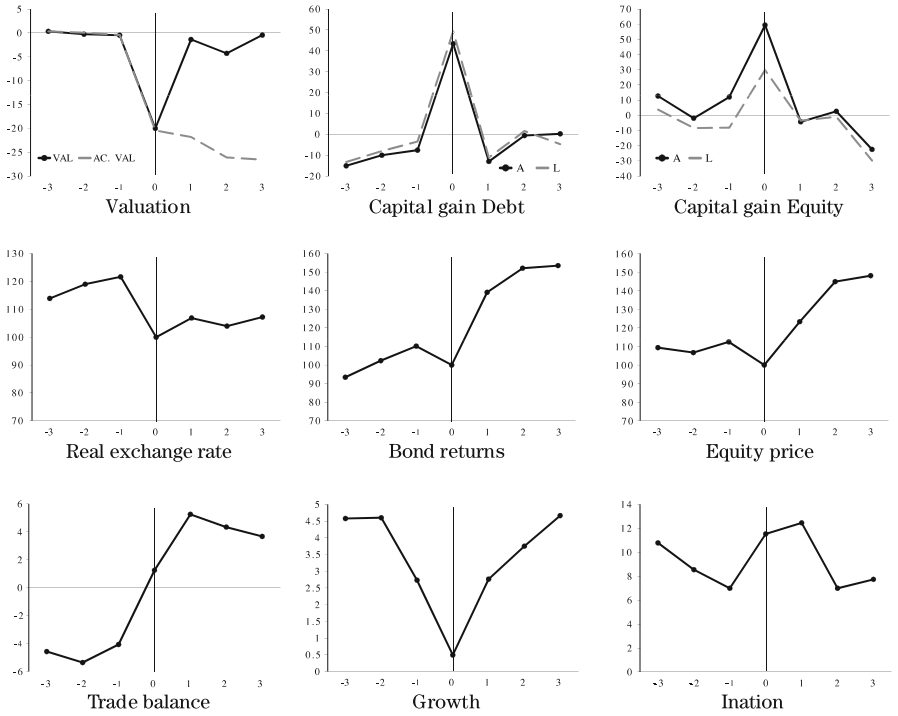

Fig. 3 Dynamics around Type-A negative valuation episodes: emerging markets and developing countries. *Note*: All charts represent cross-country means. The set of countries in this figure is formed by Argentina 2002, Brazil 1999–2002, Colombia 1997, Malaysia 1994–1999, Mexico 1994/1995, Philippines 1997–2002, South Africa 1999 and Thailand 1997. Year $t = 0$ is the year of the valuation episode. When the valuation episode lasts more than 1 year, we report in $t = 0$ the mean of the variable in that period. The analyzed neighborhood is 3 years before and after the valuation episode. *Valuation*: mean and cumulated valuation scaled by $GDP_{t=0}$. *Capital gain Debt*: real rate of capital gain in domestic currency for foreign debt assets and liabilities. Debt assets is portfolio debt + bank debt + foreign exchange reserves minus gold. Debt liabilities is portfolio debt + bank debt. Thailand and Malaysia were not taken into account in this chart. For both countries, previous 3-years flow data on debt assets were not available. *Capital gain Equity*: real rate of capital gain in domestic currency for portfolio equity + foreign direct investment assets and liabilities. Mexico, Colombia, Malaysia and Thailand were not considered in this chart since data on portfolio equity flows was not available. *Real exchange rate*: real exchange rate index, $RER_{t=0} = 100$. *Bond returns*: total return local bond index, $BR_{t=0} = 100$. *Equity price*: local equity price index, $EP_{t=0} = 100$. *Trade balance*: trade balance scaled by $GDP_{t=0}$. *Growth*: % change in the real GDP in local currency. *Inflation*: % change in CPI

also reported in Tables 6 and 7 for each country separately. In these tables, columns $t-3$ and $t + 3$ show the cumulated valuation change scaled by GDP, the mean trade balance scaled by GDP and the mean percentage change in the real exchange rate in the 3-year neighborhood. Column t reports the values in the year of the episode or the period average of the variable if the episode last more than 1 year.

An inspection of Fig. 3 and Table 6 reveals that negative episodes of Type-A were not counterbalanced afterwards: the capital loss was persistent. The mean

Table 6 Dynamics in the neighborhood of Type-A episodes

Type	Country	$t = 0$	Variable	$t-3$	t	$t + 3$
A	Argentina	2002	REER	2.8	−61.2	1.3
			TB	1.7	18.0	14.2
			Valuation	0.3	−44.8	−8.1[a]
A	Colombia	1997	REER	9.2	−5.1	−5.5
			TB	−3.4	−3.6	−0.3
			Valuation	−3.5	−11.7	1.5
A	France	1999	REER	−1.5	−5.8	0.2
			TB	1.0	0.7	−0.3
			Valuation	4.8	−11.5	4.8
A	Greece	2004	REER	3.7	2.2	1.1
			TB	−11.4	−17.9	−21.2
			Valuation	−7.1	−12.6	−10.0
A	Iceland	2000/1	REER	2.9	−8.1	8.6
			TB	−4.8	−5.7	−5.3
			Valuation	1.4	−12.8	2.4
A	Indonesia	2004	REER	8.5	−11.7	
			TB	11.8	11.1	9.4
			Valuation	0.0	−11.9	−1.2
A	Japan	1999	REER	−2.0	16.3	−7.3
			TB	1.9	2.4	1.7
			Valuation	2.9	−12.1	10.2
A	Mexico	1994/5	REER	8.9	−22.0	11.2
			TB	−5.1	−3.8	−3.1
			Valuation	−2.6	−20.0	−23.6
A	Norway	2000	REER	−1.0	−1.6	1.6
			TB	5.5	15.5	16.0
			Valuation	2.2	−14.2	0.9
A	South Africa	1999	REER	−6.0	2.9	−2.1
			TB	−1.9	−1.4	1.1
			Valuation	8.8	−18.5	20.7
A	Thailand	1997	REER	2.0	−33.0	4.5
			TB	−10.1	−3.3	5.9
			Valuation	7.3	−38.4	3.9
A	United Kingdom	1999	REER	8.5	5.5	0.0
			TB	−2.1	−3.5	−3.8
			Valuation	−10.4	10.3	8.6
A	Brazil	1999–2002	REER	−0.8	−15.9	12.2[a]
			TB	−2.4	−0.1	5.5
			Valuation	−6.1	−31.2	−6.7
A	Indonesia	1994–2000	REER	2.6	−4.8	8.5
			TB	3.6	8.8	15.4
			Valuation	−4.9	−133.1	−0.1

Table 6 continued

Type	Country	$t = 0$	Variable	$t-3$	t	$t + 3$
A	Malaysia	1994–1999	REER	3.8	−3.2	2.0
			TB	0.0	5.6	17.3
			Valuation	−8.3	−40.4	−26.2
A	Philippines	1997–2002	REER	6.3	−4.9	−1.3
			TB	−14.0	−1.5	−5.3
			Valuation	0.6	−74.9	−9.9

Note: In the column t, value of the variable in the year of the Type-A valuation episode. Valuation: cumulated valuation scaled by $GDP_{t=0}$. TB: mean trade balance scaled by $GDP_{t=0}$. REER: average % change in the real effective exchange rate index

[a] Means that the value has been calculated using the available remaining years

Table 7 Dynamics in the neighborhood of Type-B episodes

Type	Country	$t = 0$	Variable	$t-3$	t	$t + 3$
B	Finland	1998–2002	REER	−1.4	−0.2	0.1
			TB	7.9	8.6	7.2
			Valuation	−11.8	−43.3	−1.2
B	Ireland	1994–2000	REER	−2.8	−0.8	5.6
			TB	7.0	20.9	44.9
			Valuation	−8.8	20.7	−19.0
B	Israel	1999–2001	REER	0.3	4.2	−8.8
			TB	−6.0	−4.3	−2.7
			Valuation	19.7	−13.5	2.8
B	Netherlands	1994–2002	REER	0.3	0.3	1.4
			TB	2.6	4.2	9.4
			Valuation	−5.6	−80.4	−17.9
B	New Zealand	1995–2000	REER	4.9	−3.2	9.1
			TB	0.6	−1.5	−1.7
			Valuation	−16.7	19.8	−1.3
B	Sweden	1997–2003	REER	3.5	−1.2	−1.2
			TB	5.5	6.8	8.2
			Valuation	−7.3	3.3	−6.3
B	Switzerland	1996–2004	REER	4.1	−0.8	−2.4
			TB	0.7	0.5	−2.6
			Valuation	−16.7	−53.5	−3.4

Note: In the column t, average value of the variable in the Type-B valuation episode. Valuation: cumulated valuation scaled by $GDP_{t=0}$. TB: mean trade balance scaled by $GDP_{t=0}$. REER: average % change in the real effective exchange rate index

cumulative valuation loss remained close to 25% of GDP. Moreover, as shown in Table 6, most of these countries continued accumulating capital losses in the subsequent years. Figure 3 also shows that the real exchange rate largely depreciates

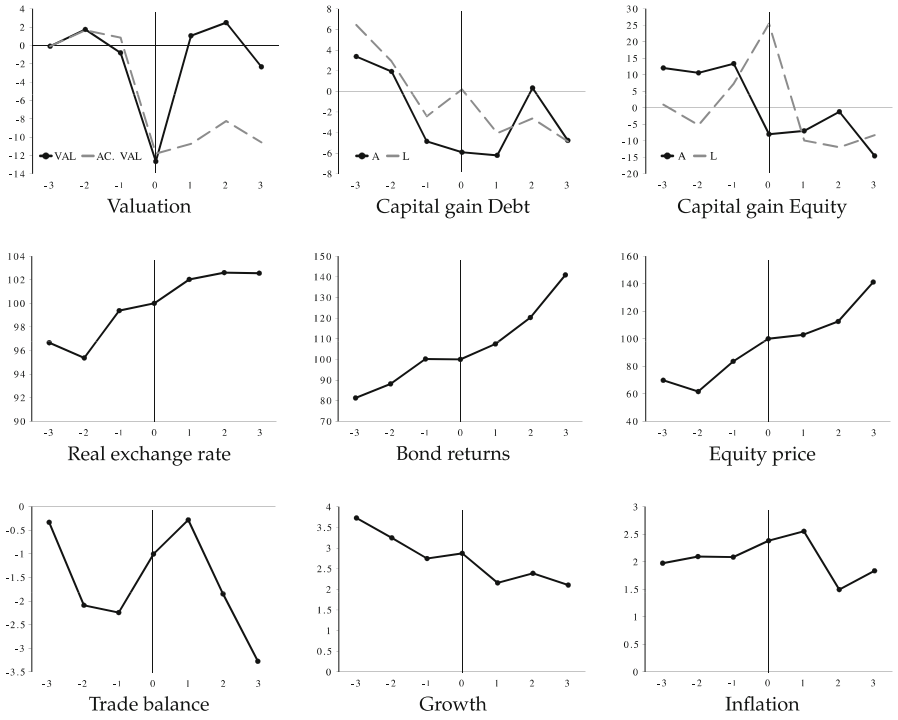

Fig. 4 Dynamics around Type-A negative valuation episodes: advanced countries. *Note*: All charts represent cross-country means. The set of countries in this figure is formed by France 1999, Greece 2004, Iceland 2000/2001, Japan 1999 and Norway 2000. Year $t = 0$ is the year of the valuation episode. The analyzed neighborhood is 3 years before and after the valuation episode. *Valuation*: mean and cumulated valuation scaled by $GDP_{t=0}$. *Capital gain Debt*: real rate of capital gain in domestic currency for foreign debt assets and liabilities. Debt assets is portfolio debt + bank debt + foreign exchange reserves minus gold. Debt liabilities is portfolio debt + bank debt. *Capital gain Equity*: real rate of capital gain in domestic currency for portfolio equity + foreign direct investment assets and liabilities. *Real exchange rate* : real exchange rate index, $RER_{t=0} = 100$. *Bond returns*: total return local bond index, $BR_{t=0} = 100$. *Equity price*: local equity price index, $EP_{t=0} = 100$. *Trade balance*: trade balance scaled by $GDP_{t=0}$. *Growth*: % change in the real GDP in local currency. *Inflation*: % change in CPI

in the year of the episode. The mean annual change was −17.8%.[4] In the year of the episode, the trade balance improves significantly. In this set of countries, the real exchange rate depreciation caused the valuation channel and trade balance to move in opposite directions. This was not the result of large negative net positions alone, it was also the result of countries having liabilities largely denominated in foreign currency.

Additionally, Fig. 3 provides information to evaluate whether the large valuation shock was Type-N or Type-G. The upsurge in Capital gain Debt strengthens the explanation of large valuations shocks being Type-N. Moreover, its negative differential significantly increased the burden of the net position in the debt

[4] In this group, South Africa is the only country experiencing real appreciation (2.9%). If we exclude this country to compute the mean depreciation, the mean fall would have been −20.7%.

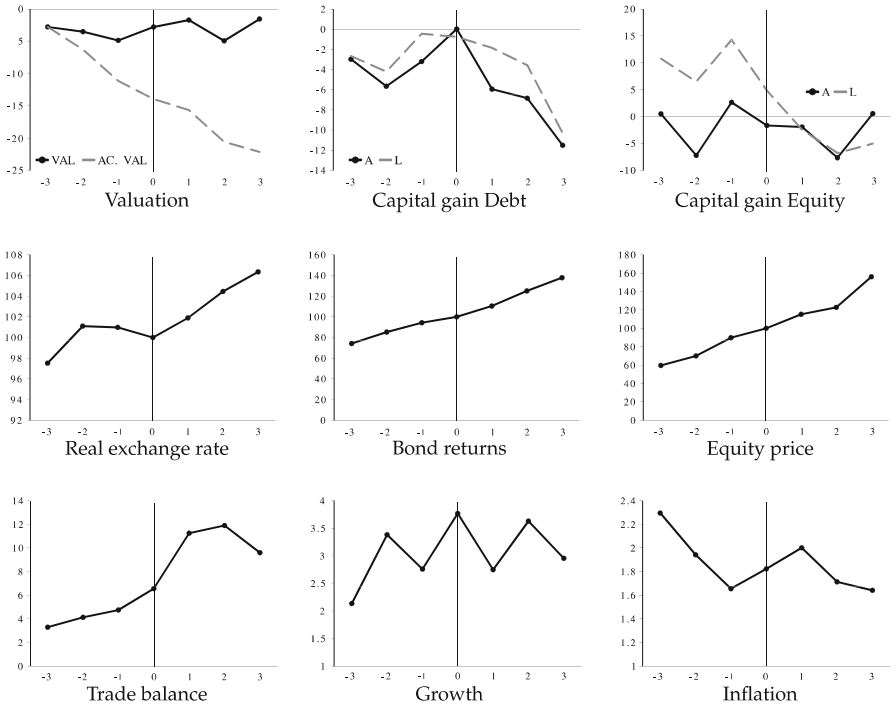

Fig. 5 Dynamics around Type-B valuation episodes: advanced countries. *Note*: All charts represent cross-country means. The Type-B valuation episodes in this figure are: Ireland 1994–2000, Finland 1998–2002, Netherlands 1994–2002, New Zealand 1995–2000, Sweden 1997-2003 and Switzerland 1996–2004. In $t = 0$ we plot the average value of the variable in the Type-B valuation episode. The analyzed neighborhood is 3 years before and after the valuation episode. *Valuation*: mean and cumulated valuation scaled by $GDP_{t=0}$. *Capital gain Debt*: real rate of capital gain in domestic currency for foreign debt assets and liabilities. Debt assets is portfolio debt + bank debt + foreign exchange reserves minus gold. Debt liabilities is portfolio debt + bank debt. *Capital gain Equity*: real rate of capital gain in domestic currency for portfolio equity + foreign direct investment assets and liabilities. *Real exchange Rate*: real exchange rate index, $RER_{t=0} = 100$. *Bond returns*: total return local bond index, $BR_{t=0} = 100$. *Equity price*: local equity price index, $EP_{t=0} = 100$. *Trade balance*: trade balance scaled by $GDP_{t=0}$. *Growth*: % change in the real GDP in local currency. *Inflation*: % change in CPI

subcomponent and contributed heavily to the negative sign of the whole valuation. Although the mean return differential in equity was positive, the relatively small gross IFI prevented this subcomponent from offsetting the capital loss coming from the debt subcomponent.

Figure 4 presents cross-country means of advanced countries experiencing negative valuation episodes of Type-A. These are: France in 1999, Greece in 2004, Iceland in 2000/2001, Japan in 1999 and Norway in 2000. In contrast to the previous group, the capital loss in the year of the episode was partially counterbalanced in most of these countries. The real exchange rate displays no significant change in the year of the episode. The charts for the return differential show that these large valuation shocks were mostly Type-G. Large gross stocks in equity or debt, combined with negative return differentials, either in debt or equity, support this

hypothesis. The bond return index shows a reduction in its growth rate in the year of the episode while the equity price index does so for the year of the episode and the following year.

Type-B large valuation episodes are presented in Fig. 5. The advanced countries and the periods of turbulence are: Ireland 1994–2000, Finland 1998–2000, the Netherlands 1994–2002, New Zealand 1995–2000, Sweden 1997–2003 and Switzerland 1996–2004. In this figure, $t = 0$ represents the mean of the variable during the Type-B valuation episode, rather than its value the year of the valuation episode. These values are also reported in Table 7 at a country level. For this set of countries, capital losses were not subsequently reversed. Moreover, the negative trend of the accumulated valuation loss remains negative for the subsequent years, driven mainly by Ireland and the Netherlands. The return differential for debt is small and positive in the episode and large and negative before and after it. By contrast, the size of the return differential for equity declines in the following years.

The real exchange rate, as well as bond and equity indices do not display large changes in behavior. The trade balance, however, experiences a substantial improvement in almost all countries in the group. The exceptions are New Zealand and Switzerland with a 3-year average trade deficit equal to -1.7 and -2.6% of GDP, respectively.

5 Conclusions

This paper studies the anatomy of large valuation episodes, giving special attention to the role of the increase in gross IFI experienced by most countries at the beginning of the 1990s. We study sharp alignments of the external imbalances that have been tackled by the current account reversals and sudden stop literature from a new angle: the valuation channel. Our approach shows how re-valuations of foreign assets or liabilities contribute to the external adjustment process. To this end, we define two types of large valuation shocks based on the valuation produced by net positions and outstanding gross stocks: Type-N and Type-G. Then, using an event-study methodology, we report the contribution of these two elements to large valuations in the total international portfolio as well as in its main subcomponents.

We also define two types of large valuation episodes as intervals during which at least one large valuation shock occurs: Type-A and Type-B. The former comprises valuation shocks with the same sign, while the latter includes valuation shocks with opposing signs. Furthermore, we present how the dynamics of the related macroeconomic and asset price variables are associated with those of the valuation channel in the tranquil times surrounding these episodes.

We find that developing countries and emerging markets had negative and Type-A valuation episodes as a result of their large net position. For this group, the debt subcomponent played the most important role. The cumulated valuation effect was rarely counterbalanced in the medium run. Within this group, almost all valuation episodes were associated with large real exchange rate depreciations followed by improvements in the trade balance. For advanced countries, however, we find that gross stocks of foreign assets and liabilities played a crucial role. In Type-A

valuation episodes, the cumulated valuation effect was then partially counterbalanced. By contrast, the cumulated negative valuation effect does not change its negative trend after Type-B valuation episodes. Finally, we find that the trade balance does not show significant changes after Type-A, but it improves substantially after Type-B large valuation episodes in the advanced economies.

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Appendix: countries and data sources

Countries: The set of countries used to identify the 59 large valuation shocks is formed by 17 emerging markets and developing countries and 21 advanced countries. The former is composed of Argentina, Brazil, Chile, China, Colombia, India, Indonesia, Israel, Korea, Malaysia, Mexico, Pakistan, the Philippines, South Africa, Thailand, Turkey and Venezuela. The latter group is formed by Australia, Austria, Canada, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Japan, the Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, the United Kingdom and the United States.

Data: Stocks and flows of foreign assets and liabilities (Lane and Milesi-Ferretti 2007a). Trade balance (Direction of Trade Statistics, IMF). Constant GDP in local currency (World Development Indicators). Current account balance and real exchange rate (International Financial Statistics, IMF). Equity price index (Morgan Stanley Capital International Inc.). Total return bond index (Global Financial Data). Foreign assets are the sum of portfolio equity assets, foreign direct investment and debt assets (debt assets includes foreign exchange reserves minus gold). Foreign liabilities are the sum of portfolio equity liabilities, foreign direct investment and debt liabilities.

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